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ABSTRACT

A total of 55 children attending 15 day care centers and nursery schools participated in an investigation of the relationship of day care quality to 4-year-old children's activities during free play and to their knowledge of social problem solving. The study also considered the extent to which social class mediated relationships between variables. Day care quality indicators included quality of interaction with teachers, arrangement of the physical space, spaciousness of the environment, appropriateness and variety of the materials provided for play, quality of the outdoor area, group size, and child-teacher ratio. Social problem solving was assessed using a social reasoning procedure adapted from that developed by Spivack and Shure (1974). Children's answers to a social dilemma were coded using Rubin's (1981) categories of prosocial and antisocial responses. A measure of social class was formed by summing mother's and father's education and occupation levels. Relationships were found between dimensions of environmental quality and children's absorption in solitary play and knowledge of social problem solving. Most of these relationships held up after the effects of social class were statistically removed. (Author/RH)

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# The Relationship of Day-Care Quality to Children's Free Play Behavior and Social Problem Solving Skills

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Abstract

The relationship of day-care quality to four-year-old children's activities during free play and their knowledge of social problem solving was investigated. Fifty-five children attending fifteen day-care centers and nursery school participated. Day-care quality indicators included quality of interaction with teachers, arrangement of the physical space, spaciousness of the environment, appropriateness and variety of the materials provided for play, quality of the outdoor area, group size, and child-teacher ratio. Relationships were found between these dimensions and children's absorption in solitary play and knowledge of social problem solving. Most of these relationships held up after the effects of social class were statistically removed.

## The Relationship of Day-Care Quality to Children's Free Play Behavior and Social Problem Solving Skill

Children in many day-care centers spend much of their day in free play activities. What features of the environment determine whether their time is spent wandering aimlessly around the room, or in more challenging activities, such as cooperating with others in a building project or experimenting with colors at an easel? In fact, current knowledge of the impact of day-care quality on children's behavior is quite limited. Certain structural indicators such as group size, adult-child ratio, and caregiver training have been linked to classroom behavior (e.g., Howes & Rubenstein, 1985; Vandell & Powers, 1983), but little is known about why and how these environmental variables produce such effects. Our goal was to examine more carefully certain aspects of the day-care environment likely to affect children's behavior during free play and their knowledge of social problem-solving. In particular, we assessed teachers' style in interacting with children, and such aspects of the physical environment as room size, appropriateness and variety of available materials, and arrangement and use of space.

Variation in Social and Intellectual Competence

Our interest in children's free play activities focused in part on whether their interactions with peers was characterized by cooperation and enjoyment or by tension and aggression. The tendency of children in day-care to be more aggressive than those reared solely at home has been noted in many studies (see Clarke-Stewart & Fein, 1983 for a review). While there are conflicting opinions as to whether day-care children are manifesting overly-aggressive behavior or an appropriate level of assertiveness, this behavior has emerged as one of the few potentially negative characteristics of children attending day-care. Thus, further investigation is warranted of the conditions under which cooperation versus aggression flourish in the day-care environment.

Also of interest was how the environment fosters children's ability to engage in solitary play for sustained periods. There is no hard evidence that the day-care environment discourages such focused attention. In fact, children who attend day-care typically out-perform children reared at home on virtually every cognitive measure (Clarke-Stewart & Fein, 1983), suggesting that the environment fosters acquisition and practice of intellectual activities.

Yet anyone who has been in a disorganized center realizes how difficult it can be for a child to complete a puzzle, for example, when the puzzles are kept in a busy area with many distractions, when some of the pieces are missing, or when unoccupied children attempt to intervene. Perhaps the growth in cognitive skills exhibited by children in day-care is even more dramatic in centers where the environment fosters focused and sustained involvement in play.

In addition to actual behavior exhibited in day-care settings, we were interested in children's reasoning about social issues. Evidence from training studies indicates that children can be taught how to take the perspective of another and how to generate strategies for solving an interpersonal dilemma (e.g., Ianotti, 1978; Orlick, 1981; Spivack & Shure, 1974). However, while comparisons of the values and expectations held by preschool teachers and mothers indicate that teachers are particularly interested in fostering cooperation and independence in children (Hess, Price, Dickson, & Conroy, 1981; Holloway, Gorman, & Fuller, 1986), few studies have investigated how they approach these goals in interactions with young children. Our purpose was to pinpoint the

aspects of teachers' behavior and the environment which may nurture skills in resolving interpersonal dilemmas.

Indicators of Day-Care Quality

Two elements of the environment were identified as most likely to relate to children's free play activities and knowledge of social problem solving. First, because of the intensity and frequency of interactions between children and adults in day-care settings (Tizard, Philips, & Plewis, 1976b), it is likely that the teacher's behavior affects social skills and knowledge, as well as sustained involvement in play. For example, teachers may show children how to cooperate with others or how to deal with feelings of anger, sadness, or frustration. Teachers also influence children's social behavior and knowledge indirectly through the model they present for how to treat others. Children are more likely to become socially competent when their teachers interact with them in a friendly, courteous, and responsive manner, and when discipline strategies are not abusive or humiliating (Rubinstein & Howes, 1979; Stallings, 1975; Prescott, Jones, & Kritchevsky, 1972; also see a review by Phyfe-Perkins, 1981). In addition to modeling negative behavior to children, harsh and humiliating discipline can affect the child's self-esteem, which in

turn shapes his or her interactions with others. In this study, we examined numerous aspects of teacher behavior, including responsiveness, warmth, control strategies, developmental expectations, and facilitation of prosocial behavior.

The arrangement and characteristics of the physical environment may be a second important source of influence on children's behavior in day-care. Components of the physical environment include the amount and arrangement of space, variety of activities provided for, amount and quality of play materials, and provision for privacy. Some studies indicate that children's interaction with peers is enhanced when there is enough space to play without interfering with others, an adequate number of toys, and small enclosed spaces suitable for small group interaction (Phyfe-Perkins, 1980; Smith & Connolly, 1980). However, Clarke-Stewart & Fein (1985) minimize the role of materials in affecting social competence, arguing that materials which foster social interaction are more commonly found in homes than in centers, yet children in centers manifest greater social competence than children reared solely at home. Concerning focused solitary play, there is some evidence that children's ability to focus on an activity may be enhanced by

physically-bounded work spaces, clear paths between areas, and accessability of materials (Montes & Risley, 1974; Phyfe-Perkins, 1980; Prescott, Jones, & Kritchevsky, 1972). Little or nothing is known about the effect of the physical environment on social problem solving knowledge. It may be speculated that children whose interactions are facilitated by a well designed environment have more opportunities to acquire a broad base of social knowledge, as well as more opportunities to practice and test the views that they have developed.

Effects of Social Class Background

In much of the previous work on day-care quality, the social class background of the children has not been taken into account. It is likely that day-care quality and social class level covary, since the expenses of running a center are usually passed along to the parents. In light of the relations between social class and play behavior (Fein, 1981; Tizard, Philips, & Plewis, 1976a), it is possible that the association between day-care quality and children's play is mediated by social class differences. In this study, we consider the possible role of social class in the relationship between day-care quality and

children's free play activities and social problem solving competence.

In summary, the following questions were addressed in this study. First, we asked whether the quality of teacher-child interaction and of the physical environment was associated with the nature of children's free play activities (i.e., positive interaction with peers, negative interaction with peers, engagement in solitary play, and noninvolvement). The relationship of these quality indicators to children's knowledge of social problem solving was also examined. A third question was whether these relationships were mediated by the social class background of the family.

## Method

### Sample

Fifty-five children participated in the study, 30 boys and 25 girls. Their average age was 53 months, ranging from 48 to 59 months. Two of the children were black, one was Asian-American, and the rest were Caucasian. The mothers averaged 15.9 years of schooling (SD 2.38). All but six were employed at least part-time out of the home, the majority in white collar positions. In five of the families, the father was not present due to death or divorce. The fathers in the

remaining 50 families had attended school for 16.62 years on average (SD 2.60).

The children were enrolled in 15 preschools and day-care centers, all of which were privately owned and operated. Four of the schools were traditional nursery schools, offering a morning program several days a week. Seventeen of the children in the sample were in this type of school. The remaining 11 were day-care centers. Of the 38 children attending one of these centers, 29 attended full time, while 9 attended for several hours two or three times a week. In order to examine the possibility that children's knowledge and behavior may be differentially affected by day-care quality depending on the amount of time spent in alternative care arrangements, the number of hours in out-of-the-home care was ascertained from the mother.

Procedures and Measures

One classroom per school was observed. The number of target children per classroom varied from 1 to 8, with a median of 3. Each of the 15 classrooms was rated using three scales from the Early Childhood Observation Instrument (ECOI) (Bredekamp, 1985): teacher-child interaction, child-child interaction, and physical environment. Minor modifications were made to each scale to tailor it to the objectives of the study;

two items were omitted and four pairs of similar items were collapsed. To provide a more fine-grained assessment, a four-point rather than a three-point scale was used. The modified scale may be found in Appendix A.

Each classroom was visited on at least three occasions for a minimum of half an hour each visit. The visits were generally carried out from one to three weeks apart. After the final visit, the ECOI was completed. Interobserver reliability was computed for five of the classrooms. Overall percent agreement across the 19 items was 89%, with a range of .60 to .90. The only item falling below .80 was "A variety of age appropriate materials and equipment is accessible to children."

Behavioral observations were obtained during two 20-minute sessions conducted during free play time on two different days. Children's behavior was observed for 10 seconds followed by a 3-5 second break in which the observer coded the behavior as falling primarily into one of the following categories: interaction with teacher, positive interaction with another child, negative interaction with another child, playing by self, observing other child(ren) or teacher, daydreaming, or moving from one activity to another or

from one location to another. Examples of behavior falling into each category, along with mean rates of occurrence, are presented in Table 1. Scores for each category were derived by dividing the number of instances of behavior in the category by the total number of intervals scored during the two observation periods.

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Table 1 about here

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Interobserver reliability was established among the three raters by having each rater observe and code five nonexperimental children (approximately 320 intervals) with a second rater. Percent agreement for the two pairs of raters was 94% or higher for each category except negative mutual interaction, which did not occur in any of the intervals used for reliability purposes.

Social problem solving was assessed using a procedure adapted from that developed by Spivack and Shure (1974). Each child was first shown a simple line drawing of two children. The gender of the children in the picture was not identifiable. The child was then shown a series of pictures of six common objects: a ball, a scooter, a wagon, a pail, a stuffed bear, and a

drum. For each object, the interviewer said, "Johnny/Kathy has been playing with this (object name) for a long time, and now Steve/Linda wants to play with it. What can Steve/Linda do so that he/she can play with the (object)?" After each response by the child, the interviewer prompted with "OK, can you think of anything else he/she could do?" When the child said he/she couldn't think of anything else, the interviewer moved on to the next object. The child's responses were tape recorded for later coding.

Responses were coded using Rubin's (1981) categories. He identifies seven categories within the "prosocial group" (e.g., asking, using polite terms, waiting) and four within the antisocial or agonistic group (e.g., unqalified command, grab, physical attack). In our study, two measures were calculated for each group: the total number of responses that fall into the group and total number of different categories mentioned. For example, "ask for it politely" and "ask to share" are both in the prosocial group, but fall into two different categories. Examples of prosocial responses from the same category are "ask to share" and "they can both use it." Percent agreement calculated on five cases (involving a total

of 93 codes) was 80%. Means and standard deviations for these measures are presented in Table 1.

A measure of social class was formed by summing mother's and father's education and occupation. Occupational level was rated using an adapted version of the Hollingshead scale. The scale was reversed so that a higher number indicated a higher social class level. In calculating the social class of single mothers, the group mean was substituted for father's education and occupation.

Class size was computed by counting the number of children in the room on the final day of observation. Student-teacher ratio was computed by dividing the class size by the number of teachers present in the room during the final day of observation. Number of hours of substitute care was obtained by asking the mother how many hours per day her child was in the care of someone other than the parents.

## Results

### Intercorrelation among Quality Indicators

The intercorrelation among the items on the ECOI scale was examined in order to determine whether data reduction was appropriate. The items from the teacher-child and child-child scales was highly intercorrelated. The average inter-item correlation

across the pool of 45 correlations was .91, ranging from .75 to 1.00. Therefore, these items were combined into a single composite, reflecting the presence in the classroom of teachers who were affectionate, responsive, and courteous, who used positive discipline techniques, who had appropriate expectations regarding children's social behavior, and who encouraged independence and the verbalization of thoughts and feelings. The internal consistency of this item was quite high (coefficient alpha = .93).

Less concordance was found among the items on the physical environment scale. These correlations, along with means and standard deviations for the items, are found in Table 2. Because of the low correlations, individual items were retained in further analyses. The item assessing availability of private areas for solitary play was dropped because all but one of the classrooms received the same score.

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Table 2 about here

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Intercorrelation among Outcome Measures

The correlations among the outcome measures revealed that none of the behavioral observation variables was related to social reasoning. Several

associations were found among the behavioral measures. Children who engaged in positive behavior with peers were less likely to engage in solitary play ($r = -.58$, $p < .001$), and spent less time observing other children ($r = -.39$, $p < .01$) or daydreaming ($r = -.35$, $p < .01$). Children who more frequently daydreamed also spent more time observing other children ($r = .36$, $p < .01$). With regard to social reasoning, children who gave more prosocial responses also gave more categories of responses ($r = .73$, $p < .001$), and children who gave more antisocial responses also gave more categories of antisocial responses ($r = .85$, $p < .001$).

Correlations between the child outcome measures and the day-care quality indicators are presented in Table 3. Those items with no correlations to the outcome measures are not included in the table. They include social class, number of hours spent in nonparental care, and five items (12, 15, 16, 17, and 18) from the revised ECOI. Children who had high quality interactions with teachers gave a larger number of prosocial responses and mentioned more prosocial categories.

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Table 3 about here

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In more spacious centers children spent more time in focused solitary play and less time observing. Less observing was also found in centers where the outdoor area was safe and permitted a variety of activities to occur. In centers where a variety of age-appropriate materials were available, children gave more prosocial responses and categories. Children in schools where space was arranged to accommodate groups of varying sizes gave more prososical responses, and fewer antisocial responses and categories.

The standard measures of day-care quality, group size, and student-teacher ratio also proved to be associated with social knowledge and behavior. In larger classes, children gave more antisocial responses and used more antisocial categories. Children in classes with a larger student-teacher ratio spent less time in solitary play.

In order to determine if the association between day-care quality and social competence was mediated by social background, correlations were first computed between social class and the day-care quality indicators. Children from high socioeconomic backgrounds were found more frequently in centers with greater opportunities for positive interactions ($r = .51$, $p < .001$), with space arranged to define activity

areas ($r = .34$, $p < .01$), and variety of materials available ($r = .51$, $p < .001$). It was not associated with the other physical environment variables, nor was it associated with group size, student-teacher ratio, or number of hours in child care.

To remove the effects of social class on the relationship between day-care quality and social competence, partial correlations were computed. Many of the relationships remained significant even after social class was partialled out. In four cases a previously significant relationship dropped below .05: the association of the total interaction scale with number of prosocial responses (from $r = .26$ to $r = .23$) and number of prosocial categories (from $r = .28$ to $r = .19$), the correlation of varied and age-appropriate materials with number of prosocial categories (from $r = .30$ to $r = .20$), and the correlation between student-teacher ratio and daydreaming (from $r = .26$ to $r = .25$). Thus, even though day-care quality was associated with social class, social class was not the sole explanatory variable underlying the relationship of day-care quality to children's behavior and knowledge.

## Discussion

While the indicators of day-care quality were moderately interrelated, several separate dimensions

were identified, each of which related to some aspect of children's social knowledge and behavior. The largest cluster of items appears to represent a general positive teaching style, characterized by being respectful, engaging, responsive, and democratic. This style was also associated with providing a variety of appropriate materials. In centers where teachers manifested this positive style, children were more prosocial in their knowledge of social problem solving. Other predictors of problem solving knowledge included several aspects of the physical environment and the size of the group. When given adequate space and a low student-teacher ratio, children spent more time engaging in focused solitary play. In crowded conditions indoors, or when the outdoor area was inadequate, they spent more time observing others.

For the most part, these relationships held up for children from different social class levels. However, it must be noted that most of the parents were middle class. Further investigations might include families from a wider range of social class backgrounds.

An intriguing and unexpected finding of the study was that the day care quality indicators were related to solitary play activities and daydreaming, but not to negative or positive social interactions with peers.

Measurement difficulties may be partly responsible for this pattern, particularly regarding negative interactions. They occurred rarely and may not have been picked up during the observations. By contrast, most children slipped in and out of solitary play quite frequently. A substantive explanation for this pattern is that social interactions may be less vulnerable to disruption than are solitary activities. One's partner in an interaction provides a focal point of attention and a spur to maintain engagement in the activity. The peer may function to buffer the effects of the environment. During solitary efforts, outside distractions or competing thoughts and feelings may derail attention from the task. An analogy in adult terms might be to contrast the ease of talking on a noisy, crowded bus with the difficulty of reading or writing in such a setting. This possible explanation could be explored in future research.

The demonstration of a relationship between teachers' interaction style and children's prosocial reasoning dovetails nicely with the literature on parental influences upon prosocial dispositions and behavior. While findings from this work have often been mixed or inconclusive, many studies indicate that children who demonstrate prosocial beliefs and behavior

have parents who are nurturant, who use reasoning rather than power assertion as a control strategy, and who model prosocial behavior (Radke-Yarrow, Zahn-Waxler, & Chapman, 1983). Positive maternal affect has also been linked with cognitive outcomes in preschool children (Estrada, Arsenio, Hess, & Holloway, in press).

Our findings on the importance of the physical environment also suggest a parallel to the parenting literature. There is some speculation about the parent's role in creating situations where prosocial responses are possible, expected, or encouraged. Parents may engineer situations that foster a sensitivity to others, and that provide prosocial behavioral options. Similarly, in the classroom the teacher facilitates or inhibits prosocial behavior through arrangement of space, routines for moving between activities, and provision of varied and age-appropriate materials.

Research on the family also points to the complexity of the relation between socialization practices and prosocial behavior. The social class and ethnicity of the family and the sex of the child mediate this relationship. Additionally, when two parents are present, the interaction of their beliefs

and behavior exerts a unique influence on the child (Radke-Yarrow, Zahn-Waxler, & Chapman, 1983). Research on teacher-child interactions has not yet attained this level of complexity, but certain issues can be identified for further study. Of particular importance is examination of the conjoint influence of teacher and parents. Little is known about the effects on children's prosocial skills when key socialization figures present divergent or competing modes, or differ in their expectations concerning appropriate behavior. Also of interest are the potential differences between boys and girls as far as their response to teacher practices.

The relationship of day-care quality indicators to social problem solving knowledge is of particular interest, since at present little else is known about educational experiences that affect this skill outside of formal training programs. Our finding that social reasoning skills were related to the opportunity for interaction with others and the size of the group suggests that the teacher rather than the physical setting may convey this teaching. Observational studies of teacher behavior may reveal more precisely the process by which this skill is conveyed.

In general, the findings from this study suggest that ratings of day-care quality are significant predictors of children's behavior (see also Bjorkman, Poteat, & Snow, 1986), but highlight the need to search for relationships when theoretical linkages can be hypothesized.

Additionally, further psychometric work using larger samples is needed to establish the integrity and validity of the subscales on measures such as the Early Childhood Observation Instrument. We found that two of the subscales, teacher-child interaction and child-child interaction, seemed to represent a single underlying factor, while the physical environment subscale apparently contained a number of different constructs. Furthermore, our data indicated that some items may be of more importance than others in predicting child outcomes. For example, the overall size of the room was of more significance in predicting children's behavior than was the availability of individual storage areas. Factor analysis can provide a more formal analysis of these differences, generating weightings to reflect item importance.

Another important step for future research is to specify the process by which these indicators affect children. In the day-care literature, examination of

micro level variables has only begun. The effects of group size, for example, could be due to the lack of one-to-one interaction with the teacher, the reduced capability of the teacher to facilitate peer relations, or any number of other reasons. A more fine grained examination of this construct might include cross-cultural work. In Japan, for example, class size is not related to engagement by preschoolers in constructive activities because teachers encourage lateral social interaction among students rather than relying on a hierarchical authority structure (Lewis, 1984). This call for increased specificity in identifying relevant theoretical frameworks has been echoed in the literature on family effects on cognitive and academic outcomes (Hess et al., 1982).

An additional challenge addressed in the literature on improving school quality (Fuller, 1986) is to identify aspects of school quality which are causally linked to school achievement or behavior. We found, for example, a very high correlation between the quality of teachers' interactions with children and the availability of age appropriate materials. Each of these variables is linked to prosocial reasoning. It is possible that there is a third factor underlying the two variables which accounts for their relationship to

social reasoning. Identification and isolation of these causal factors is essential in forming policies related to improving school quality.

## References

Bjorkman, S., Poteat, G. M., & Snow, C. W. (1986). Environmental ratings and children's social behavior: Implications for the assessment of day-care quality. American Journal of Orthopsychiatry, 56, 271-277.

Bredekamp, S. (1985). The reliability of the instruments and procedures of a national accreditation system for early childhood programs. Unpublished doctoral dissertation, University of Maryland.

Clarke-Stewart, K. A., & Fein, G. G. (1983). Early childhood programs. In P. Mussen (Ed.), Handbook of child psychology. Vol. 2. New York: John Wiley & Sons.

Estrada, P., Arsenio, W. F., Hess, R. D., & Holloway, S. D. (in press). Affective quality of the mother-child relationship: Longitudinal consequences for children's school-relevant cognitive functioning. Developmental Psychology.

Fein, G. G. (1981). The physical environment: Stimulation or evaluation. In R. Lerner & H. Busch (Eds.), Individuals as producers of their own development: A life span perspective. New York: Academic Press.

Fuller, B. (1986). Defining school quality. In J. Hannaway & M. E. Lockheed (Eds.), The contributions of the social sciences to educational policy and practice: 1965-1985. Berkeley: McCutchan Publishing.

Hess, R. D., Price, G. G., Dickson, W. P., & Conroy, M. (1981). Different roles for mothers and teachers: Contrasting styles of child care. In S. Kilmer (Ed.), Advances in early education and day-care. Greenwich, CT: JAI Press.

Hess, R. D., Holloway, S. D., Price, G. G., & Dickson, W. P. (1982). Family environments and the acquisition of reading skills: Toward a more precise analysis. In I. E. Sigel & L. M. Laosa (Eds.), Families as learning environments for children (pp. 87-113). New York: Plenum.

Holloway, S. D., Gorman, K. S., & Fuller, B. (1986, August). Contrasting child rearing beliefs: Mothers and preschool teachers in Mexico. Paper presented at the Annual Meeting of the American Psychological Association, Washington, DC.

Howes, C., & Rubinstein, J. L. (1985). Determinants of toddlers' experience in day-care: Age of entry and quality of setting. Child Care Quarterly, 14, 140-151.

Ianotti, R. J. (1978). Effect of role-taking experiences on role taking, empathy, altruism, and aggression. Developmental Psychology, 14, 119-124.

Lewis, C. (1984). Cooperation and control in Japanese nursery schools Comparative Education Review, 28, 69-84.

Montes, F., & Risley, T. R. (1974). Evaluating traditional day-care practices: An empirical approach. Child Care Quarterly, 4, 208-215.

Orlick, T. D. Positive socialization via cooperative games. Developmental Psychology, 17, 426-429.

Phyfe-Perkins, E. (1980). Children's behavior in preschool settings: A review of research concerning the influence of physical environment. In L. Katz (Ed.), Current topics in early childhood education. Vol. 3. Norwood, NJ: Ablex Publishing Corporation.

Phyfe-Perkins, E. (1981). Effects of teacher behavior on preschool children: A review of research. Washington, DC: National Institute of Education.

Prescott, E., Jones, E., & Kritchevsky, S. (1972). Day-care as a child rearing environment. Washington, DC: National Association for the Education of Young Children.

Radke-Yarrow, M., Zahn-Waxler, C., & Chapman, M. (1983). Children's prosocial dispositions and behavior. In P. Mussen (Ed.), Handbook of child psychology. Vol. 4. New York: John Wiley & Sons.

Rubenstein, J. L., & Howes, C. (1979). Caregiving and infant behavior in day-care and in home. Developmental Psychology, 15, 1-24.

Rubin, K. H. (1981). Coding manual for the social problem solving test. University of Waterloo.

Smith, P. K., & Connolly, K. J. (1980). The ecology of preschool behavior. Cambridge, England: Cambridge University Press.

Spivack, G., & Shure, M. (1974). Social adjustment of young children. San Francisco: Jossey-Bass.

Stallings, J. (1975). Implementation and child effects of teaching practices in follow-through classrooms. Monographs of the Society for Research in Child Development, 40, 7-8.

Tizard, B., Philips, J., & Plewis, I. (1976a). Play in preschool centres. II. Effects on play of the child's social class and of the educational orientation of the centre. Journal of Child Psychology and Psychiatry, 17, 251-264.

Tizard, B., Philips, J., & Plewis, I. (1976b). Play in preschool centres. I. Play and measures and

their relation to age, sex, and IQ. Journal of Child Psychology and Psychiatry, 17, 251-264.

Vandell, D. L., & Powers, C. P. (1983). Day-care quality and children's free play activities. American Journal of Orthopsychiatry, 53, 493-500.

Table 1

Description of Behavioral Observation Categories

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Positive interaction with peers: (M = 34.25; SD = 27.28)

Conversing or playing with peers in a positive way (e.g., building with blocks, talking about an experience, chasing each other on the playground).

Negative interaction with peers: (M = 2.20; SD = 5.27)

Conversing or playing with peers in a hostile or aggressive way (e.g., destroying another child's sand castle, teasing, biting).

Interaction with teacher: (M = 7.96; SD = 11.29)

All interactions with teacher (e.g., asking for help, receiving instructions for an art project, sitting on lap while looking at a book).

Playing by self: (M = 72.58; SD = 33.64)

All solitary play (e.g., reading, painting at easel, making objects from playdough).

Observing: (M = 23.35; SD = 15.85)

Observing teachers or other children without being actively involved (e.g., watching other children swing, watching teacher pour out glue).

Daydreaming: (M = 2.05; SD = 2.99)

Staring into space without apparently seeing anything.

In transition: (M = 7.89; SD = 7.01)

Noninvolved movement (e.g., walking from doll corner to easels, aimlessly circling around the snack tables).

Prosocial responses: (M = 8.02; SD = 6.05)

Number of prosocial responses given.

Prosocial categories: (M = 1.98; SD = 1.25)

Number of categories of prosocial response given.

Antisocial responses: (M = .81; SD = 1.87)

Number of antisocial responses given.

Antisocial categories: (M = .33; SD = .58)

Number of categories of antisocial response given.

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Table 2

Relations among Day-Care Quality Indicators (n = 15)

| Quality indicators | Descriptive Statistics | | Pearson Product Moment Correlations | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | M | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Interaction quality composite (1-10)[1] | 32.07 | 10.61 | -- | | | | | | | | |
| Spaciousness (11) | 3.13 | .74 | .42 | -- | | | | | | | |
| Areas spatially defined (12) | 3.33 | .98 | .78** | .43 | -- | | | | | | |
| Accommodation of varied groups (13) | 3.33 | .82 | .48 | .51* | .39 | -- | | | | | |
| Varied/Appropriate materials (14) | 3.47 | .74 | .94*** | .48 | .85*** | .31 | -- | | | | |
| Individual storage space (15) | 3.27 | .88 | .22 | .16 | .47 | .26 | .34 | -- | | | |
| Soft elements (17) | 2.53 | .83 | .08 | .57* | .20 | .56* | .03 | .18 | -- | | |
| Sound absorbing materials (18) | 3.00 | 1.20 | .21 | .48 | .37 | .66** | .16 | .41 | .79*** | -- | |
| Safety/Versatility outdoor area (19) | 3.07 | .88 | .14 | .31 | .30 | .36 | .17 | .34 | -.05 | .27 | -- |
| Group size | 15.20 | 2.91 | -.68* | -.41 | -.30 | -.51* | -.44 | .09 | -.14 | -.37 | -.14 |
| Student-Teacher ratio | 7.94 | 1.80 | -.11 | -.05 | -.37 | .07 | -.30 | .15 | .01 | .09 | .02 |

* $p < .05$
** $p < .01$
*** $p < .001$

[1] Numbers in parentheses refer to item numbers on revised ECOI (Appendix A).

Table 3

Relationship of Free Play Behavior and Social Knowledge to Day-Care Quality (Pearson Product Moment Correlational (n = 55)

| | Interaction Opportunities (1-10)[1] | Spaciousness (11) | Accommodation of varied group sizes (13) | Varied and age-appropriate materials (14) | Safety and versatility of outdoor area (19) | Group size | Child-Teacher ratio |
|---|---|---|---|---|---|---|---|
| Free play behavior | | | | | | | |
| with peers: Positive | -.14 | -.07 | -.11 | -.16 | .24 | .18 | .07 |
| with peers: Negative | .11 | -.18 | .03 | .11 | .13 | .15. | .04 |
| with teacher | .06 | -.06 | .13 | .10 | -.17 | -.16 | .15 |
| by self: Playing | -.02 | .30* | .10 | .00 | -.21 | -.20 | -.26* |
| by self: Observing | .07 | -.32* | -.23 | .07 | -.29* | .08 | .17 |
| by self: Daydreaming | -.23 | -.25 | -.09 | -.22 | -.08 | .20 | .26* |
| in transition | .10 | -.12 | -.03 | .08 | -.02 | .21 | .18 |
| Social knowledge | | | | | | | |
| Prosocial responses | .26* | .04 | .31* | .31* | -.18 | -.05 | -.08 |
| Prosocial categories | .28* | -.10 | .16 | .30* | -.13 | -.04 | -.09 |
| Antisocial responses | -.10 | -.24 | -.38** | -.13 | -.17 | .39** | .14 |
| Antisocial categories | -.12 | -.22 | -.28* | -.13 | -.13 | .37** | .04 |

* $p < .05$
** $p < .01$
*** $p < .001$

[1]Numbers in parentheses refer to item numbers on revised ECOI (Appendix A).

Appendix A.

Early Childhood Observation Instrument (Revised)

Staff-Child Interaction

1. Staff interact frequently with children showing affection and support.
2. Staff are responsive to children.
3. Staff speak with children in a friendly, courteous manner.
4. Staff encourage independence in children, as they are ready.
5. Staff use positive approaches to help children behave constructively. Staff do not use physical punishment or other negative discipline methods that frighten or humiliate children.
6. The overall sound of the group is pleasant most of the time.

Child-Child Interaction

7. Children are generally comfortable, relaxed, happy, and involved in play and other activities.
8. Staff encourage prosocial behaviors in children such as cooperation, helping, taking turns, talking to solve problems.
9. Staff expectations of children's social behavior are developmentally appropriate.

10. Children are encouraged to talk about feelings instead of solving problems with force.

Physical environment

11. There is enough usable space indoors and outdoors so that children are not crowded.
12. Activity areas are defined by spatial arrangement.
13. Space is arranged to accommodate children individually, in small groups, and in a large group.
14. A variety of age appropriate materials and equipment are accessible to children.
15. Individual space is provided for each child's belongings.
16. Private areas, such as enclosed book corners, lofts, playhouses, where children can play or work alone or with a friend are available indoors and outdoors.
17. The environment includes many soft elements such as rugs, cushions, rocking chairs, soft furniture, soft toys, and adults who cuddle children in their laps.
18. Sound absorbing materials, such as ceiling tile and rugs, are used to cut down noise.
19. The outdoor play area is protected from access to streets or other dangers. A variety of activities can go on outdoors throughout the year.